

# From Fragmentation to Configuration

HAROLD D. LASSWELL\*

*John Jay College of Criminal Justice, City University of New York, 315 Park Ave., South, New York, New York*

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## ABSTRACT

The rapid emergence of the policy science conception is a consequence of profound changes in the modern world, and in turn is affecting public and private decision. In broad outline European civilization has passed from a high level of homogeneity to increasing fragmentation, and more recently toward a new and comprehensive configurative outlook.

(1) The differentiation of the modern world fostered the fragmentation of intellectual life. It reduced the relative number of men of knowledge who gave attention to the map of knowledge as a whole, or to the social consequences and policy implications of science and scholarship.

(2) At a later stage of differentiation specialists attain a high level of involvement in the policy processes of society. Increasingly they utilize a configurative approach to the advancement and application of knowledge.

(3) At first, special and exclusive interests are multiplied by differentiation and fragmentation. As the aggregate impact of men of knowledge expands, particular demands are made more universal. This is a by-product of coalition formation.

(4) Configurative ways of thinking do not necessarily result in effective control by champions of democratic and peaceful policy aims unless genuine freedom of access to knowledge—to data banks—is maintained, realistic common interests are unlikely to be defined either by policy scientists or decisionmakers.

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## Introduction

The rapid emergence of the policy sciences conception is a consequence of profound changes in the modern world. In broad outline European civilization has passed from intellectual homogeneity to fragmentation and, more recently, has moved toward a new and comprehensive configurative outlook.

It is customary to begin such a summary by referring to the unified world view of medieval Europe and to trace the fragmentization that attended the growth of secularized science and technology. One must acknowledge how easy it is to exaggerate the former unity of Western man, and to overlook the continuity of pre-Christian Greece

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\* Distinguished Professor of Policy Sciences, John Jay College of Criminal Justice, City University of New York; Ford Foundation Professor Emeritus of the Social Sciences and Law, Yale University, New Haven, Connecticut.

and Rome, and of primitive tribal cultures. Similarly the appearance of homogeneity in other civilizations must be qualified, as in the Chinese case, by reference to the influence of Buddhist, Taoist and folk elements alongside the dominant Confucian strain. Nevertheless, it is valid to insist on the relative unity of concept and of intellectual procedure among Europeans or Chinese.

## Differentiation and Fragmentation

The last two centuries have witnessed a spectacular growth of knowledge. The growth can be characterized with the aid of various indicators that conform approximately to the exponential interpretation that Derek J. de Solla Price<sup>1</sup> has made familiar, whether one takes books published, library holdings, scientific and scholarly periodicals, literacy or years in school.

Accompanying and accentuating the growth of knowledge has been its differentiation. Specialization, too, appears to be doubling every decade or two. The relevant indicators include the multiplication of professional organizations and journals, the multiplication of courses in fields recognized at a given time, and the classificatory terms employed in the abstracting and indexing services referring to books and articles.

Fragmentation is a more complex matter than differentiation. It implies that those who contribute to the knowledge process lose their vision of the whole and concern themselves almost exclusively with their specialty. They evolve ever more complex skills for coping with their immediate problems. They give little attention to the social consequences or the policy implications of what they do.

Satisfactory indicators of fragmentation are not easy to come by. A preliminary indicator, perhaps, is decline in the relative number of those who write textbooks or give general courses in a field. One obligation of a teacher is to provide a guide to the state of knowledge as a whole or to the map of a specific specialty, viewed as a whole. Linkages are in every direction—linkages of historical evolution: of scope, method and result; of significance for the future growth and utilization of knowledge. The teacher may fail to note these interconnections. He may lose sight of them, accelerating tendencies to combine fragmented perspectives with specialized operations. The editors of some learned journals keep an integrated perspective alive. Their journals perform an “omnibus” function for an area of science, scholarship, or problem facing since they combine a broad view of the specialty with contributions chosen from several sub-fields within it. The tendency to give recognition, position and assistance to those who make distinctive hence largely specialized contributions undermines an inclusive point of view.

A partial indicator of fragmentation is the relative decline of attention to the history of a given specialty. The degree of attention given to recent rather than past publications is often taken as an indicator of the degree to which a field is fulfilling its obli-

<sup>1</sup> Derek J. de Solla Price, *Science Since Babylon* (Yale paperbound, New Haven: Yale University Press, 1961); *Little Science, Big Science* (Columbia paperback, New York: Columbia University Press, 1965).

gation to advance knowledge. It is easy to see how this may foreshorten the time perspectives of specialists, and encourage "presentism."

In many ways the process of symbolic fragmentation plays a constructive function. All who share a new research vision or method of attack are innovators. As such they may suffer symbolic deprivations (costs). Some of these deprivations are imposed by fellow-scientists and scholars who treat the innovator with attitudes that range from scepticism to ridicule and righteous indignation. Though men of knowledge think of themselves as devoted to the advancement of impersonal knowledge they are likely to be strongly competitive personalities, demanding high levels of performance by themselves and others. It is not unusual to confuse the advancement of knowledge with the advancement of themselves. This may be accompanied by the jealousy that springs from unconscious envy that anyone else has thought of something new and important. Hence the tendency to gang up against the innovator, especially the colleagues who utilize cross-field techniques or modes of thought.

In answer to restrictive practices by the "establishment" of the moment, innovators typically "overact" in the symbolic sense, by inflating their self-importance. This is a form of whistling in the dark to keep up their courage in times of uncertainty and partial deprivation. The discovery of a new identity symbol ("biochemistry" or "biophysics", for instance) enables an emerging corps of specialists to obtain the assets required to get on with their projects. And presently they consolidate a new establishment many of whose members view the next wave of innovators with scepticism, ridicule and indignation.

The effort required to achieve conclusive results is enormous. It is attended by constricting the focus of attention to the tasks in hand. Rewards (value indulgences of all kinds) are arranged in ways that encourage students and younger professionals, in particular, to keep their minds on the straight and narrow path.

Fragmentation is fostered by the self-segregating propensities of man. We tend to develop life styles adapted to particular environments (ecological niches). The scientific and scholarly community turns in on itself in the same way that religious sects, immigrants from the same locality, kinsmen, artisans, or the very rich gang together. They provide reciprocal services of mutual understanding, admiration, relaxation and affection: and they are not without significance for education, codes of responsibility, financial grants, and power. Contact with the non-specialized is cut down.

## **Differentiation and Configuration**

When we examine the aggregate impact of differentiation in recent decades our picture of fragmentation begins to change. Not because specialization has diminished; it proliferates. The significant factors are twofold: First, differentiation provides links with the whole social and political environment; second, a shared configurative image of the whole tends to appear.

## **Links with Policy**

The development can be briefly recapitulated. The number of people in society who are oriented toward knowledge (enlightenment) as an outcome valued for its own sake

is small. Nevertheless, masses of people can be brought to encourage the advancement of knowledge as a means of contributing to other values than enlightenment. Governments interested in political power willingly subsidize science applied to weaponry. Industries concerned with new products and techniques finance science. The importance of health creates the possibility of a huge constituency for men of knowledge. Likewise for education, family planners, enemies of discrimination and modernizers of ecclesiastical action.

The number of persons who act as intermediaries between men of knowledge and policymakers (and executors) keeps growing. One career track begins with appointment as head of a laboratory or department, and proceeds to the headship of a school, college or university; or of a division or bureau. Men of skill in interpreting the significance of knowledge to other members of the knowledge community, or to policy personnel, become involved in occasional, consultative or official roles in the decision process of governmental or non-governmental organizations at the national, trans-national or sub-national level. Examining the decision process in more detail it is clear that structures relatively specialized to each phase may draw on these intermediaries.<sup>2</sup>

As the scope of intermediaries broadens, their perspectives are likely to change. Their image of the decision process and of the social context becomes more inclusive and realistic. Presumably they become better informed about how the particular interests of a constituency can be integrated with a conception of the common interests of a larger coalition of interests, perhaps inclusive of the whole community. Hence their skill improves in formulating policy objectives and strategies, including strategies for mobilizing the support required to get results.

At the early stages greater contact with policy generates effective demand for policies that serve *special* rather than *common* interests. Effective decisionmakers may be unwilling to consider more widely ramifying social consequences. They feel no responsibility for proposing public interest policies designed to prevent adverse effects. During these decades the total flow of decision in government, business, and other organizations may disregard or play down such matters as the significance of the internal combustion engine for air pollution, the destructive results of industrial waste on aquatic life, the adverse consequences of pharmaceuticals for health, the role of detention systems as schools of crime, the effect of corrupt business practices on the integrity of law enforcement, the effects of obsolete educational technique on drop-outs (and in general on the waste of human resources), and so on. The institutions of war and oligarchy pre-date modern science and scholarship, and it is worth reiterating that thus far they have captured science and scholarship for their special concerns.

There are grounds for suggesting that these results are temporary, not permanent, and that the intellectual pre-requisites for different effects are spreading. In belated parallel to the multiplying network of intermediaries is what may be called the counter-offensive of configurative thinkers.

<sup>2</sup> Developed in Lasswell, H. D., "The Emerging Conception of the Policy Sciences," *Policy Sciences*, 1 (1970), 3-14.

## The Counter-Offensive of Configurative Thinkers

It is only partly accurate to describe these intellectual developments as a revival of yesterday's unity of outlook. It is restoration with a difference; in fact, with many and great differences. The converging trends include a more explicit definition of the principal components of a comprehensive, problem solving approach, and a much more highly diversified set of techniques than before.

Conspicuous in this reorientation is the discovery of time, and particularly of future time. Before the critical projection of future lines of development could be regularly done, it was necessary to cast aside the spell of a misapplied version of the scientific approach. So widespread was the veneration for a single model of causation that the future was confidently subsumed under grandiose theories of unilinear evolution. The assumption was that the key to the future was to find "the laws of evolution" in history and society and to extrapolate them to coming events. In the name of the unfolding of transempirical "ideas" in history it was considered justifiable to follow the Hegelian formula and to anticipate the inevitable synthesis. Paralleling Darwin—though with a different cast of participating entities—the future seemed to be with particular races or nations.

The current approach to the future became possible when tentativism replaced dogmatism, and complex notions of statistical causation legitimized the consideration of families of alternatives. Projections could be put forward for critical evaluation in the light of inferences drawn from trends and from the past discovery of partially confirmed interdependencies.

A new respect has arisen for the creativity displayed by the central processes of living forms, and especially for the informational and symbolic systems of human individuals and groups. These become "intervening variables" that may alter the direction and the pattern of event-sequences. Strategies of creativity in problem-solving find partial expression in the policy orientations of man and society.

Cognitive maps, then, seem more crucial than ever. So, too, do preferential orderings (of value demands) and systems of identity. Symbolic maps of potential occurrences function as organizing frames of reference for physical, biological and cultural configurations. In consequence, the limitations of past views become more obvious. For instance, traditional astronomy did not predict artificial satellites. Nor could it until traditional assumptions were refined as a by-product of integration with biological and cultural theory.

The new outlook on prediction and creativity gave renewed urgency to the ancient problem of clarifying the goals of human effort. What patterns ought "I"—or "we"—prefer? We may opt for high or low levels of value distribution, or for various priorities of valued shaping among deference or welfare values.<sup>3</sup> Since value clarification goes on through life, it is pertinent to consider the task in terms of both "content" and "procedure." The former emphasizes postulations, definitions and specifications: The latter underline the techniques by which these matters are invented and thought about.

<sup>3</sup> Categories are in Lasswell, H. D., and Kaplan, A., *Power and Society* (New Haven: Yale University Press, 1950).

Truth by definition is not enough: Hypothetical formulations require procedural discipline by the consideration of past, present and future causes and consequences. Choice among alternatives is affected by the procedure.

Sustained concern for inclusive conceptions of value is most likely to occur during formative years. We do not, however, overlook the role of such concerns in later life. Consider the hundreds of thousands of adults who participate in "retreats" designed to reassess their ethical and religious position.

Whether the intellectual task is to clarify value goals, to project future development in the light of knowledge of past trends and conditioning factors, or to invent and assess alternative policies for the optimization of goals, the essential feature of the approach is contextuality. As knowledge and experience accumulate the danger of fragmented thought and action is more visible than ever before.

It is dangerous to define a problem in segregation from the full range of values. We think of a policy problem as a discrepancy between preferred and actual or potential events. A sense of discrepancy typically appears when an obstacle is perceived standing in the path of realizing a dominant value. For a taxpayer a problem is initially defined by a tax increase. However, the mere fact of increased taxation receives a different interpretation when it is seen in the context of a popular or unpopular war, by opponents or friends of inflation, and so on. If proposed policy is considered in isolation, the full range of costs and benefits is likely to be ignored.

From the point of view of scientists and scholars who are chiefly concerned with the advancement of knowledge, a configurative approach may be perceived as essential to the discovery and confirmation of theoretical models concerned with the timing of events within and among value-institution sectors. For instance, if a ten per cent increase is made in the funds available to combat mental illness, what effects on mental illness can be predicted? To what extent will funds available for other health related programs be reduced or increased? With what probable effects on aggregating health? How will the outputs in the mental illness field affect outcomes in economic, family, scientific and other sectors?

These reminders are enough to suggest why the high speed computer has been such a revolutionizing tool. In effect it allows a contextual, multi-valued ("philosophic") point of view to pass from fantasy and exhortation to reality.

## Special and Common Interests

Is the configurative viewpoint making itself more effective in the decision processes of society? The analysis suggests that differentiation multiplies specialization, and that this is positively related to the multiplication of operational groups (who achieve distinctive identities, demands and expectations); and that, in the early aggregative stage, the result is to increase the impact of special exclusive interests. The most striking implication is that at later stages the aggregate impact is to strengthen common or inclusive interests. From destruction of the environment as a side-effect of industrial wastes resulting from the new science-based technology, the next phase is effective decisions to curb pollution and other forms of environmental damage.

The essential mechanism is the "universalization" of the demands, made by particular groups and organizations. If groups are to act effectively in political arenas they must define common demands with other groups. These explicit or tacit coalitions involve the acceptance of some interests perceived as joint, the acceptance of some demands perceived as necessary costs of parallel action. The process includes the discovery of common identities that become a polarizing influence for the formation of new expectations and demands.

The most significant question for the future would appear to be the aggregate effect of the configurative approach. We mentioned the computer as an instrument capable of enabling all participants in the social process to engage in a continuing intelligence and appraisal activity designed to re-define policy objectives and strategies. If there is unimpeded access to progressively more comprehensive data banks, the process of "universalization" may go forward, each participant can be supplied with a map of the whole world and local community contexts in which he functions. Hence he can consider the preferential significance of cognitive expectations, discern common interests on an inclusive scale, and identify himself with those who participate in public and civic order.

However, we cannot be very certain of this projection. It is essential to give full weight to the fundamental structure of the world decision process. This means that the world arena is divided into uncertain and apprehensive world states and coalitions. These participants share the expectation of violence, demands on political elites to prepare for possible war, and identification with a body politic whose scope is less than inclusive of the whole. Nation states are internally divided by great differences in identity (tribes, cities, regions, social castes and classes, rich and poor, politically by strong and weak, educated and uneducated, young and old, religious and non-religious, and so on). These differing identities formulate particular demands in every value category (power, wealth, and so on), and assume cognitive maps of varying content.

Specialists on knowledge play varied roles in the decision process of every territorial and pluralistic group. They are especially active at the intelligence (planning) and appraisal phases of decision. They are conspicuous in the promotional activities of many political parties and pressure groups, as well as in prescribing, invoking, applying and terminating operations.

As indicated above, the net effect of the later stages of a differentiating trend depends on freedom of access by all participants to the common stock of knowledge, and to the several phases of every value-institution process. Will this freedom of access be forthcoming? Or will the existing oligarchies—some highly concentrated, some relatively dispersed—maintain or increase the degree of their effective monopoly of knowledge, agitation, authority and control? Will they capture configurative thinking for systems of non-shared power?

If the policy sciences approach is promptly applied by a developing profession that serves the many, not the few, the chances will be improved that war and oligarchy can be superseded by the genuine sharing of effective knowledge and power. Differentiation can lead past and beyond fragmentation, coupled with special or exclusive interest, to a stage of configurative redefinition of common interest.

## Summary

*Differentiation* of intellectual perspectives and operations has increased during the past two centuries with which we are particularly concerned.

Differentiation at first increased the *fragmentation* of outlook among men of knowledge.

A later trend toward *configurative thinking* has been stimulated by the *aggregate involvement* of men of knowledge with policy in all sectors of society, and by the *counter-offensive of configurative thinkers*.

Knowledge has been utilized for the *relative benefit of power and other elite structures*. While interaction tends to reduce fragmentation and universalize common, over special interests, the process is limited by the control over knowledge exercised by elites. *Democratization and peace depend on relatively equal access to knowledge by territorial and pluralistic groups*.